5e

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/619,361	07/19/2000	Masafumi Usuda	15689.54	2184

22913 7590 09/25/2003

WORKMAN NYDEGGER (F/K/A WORKMAN NYDEGGER & SEELEY)
60 EAST SOUTH TEMPLE
1000 EAGLE GATE TOWER
SALT LAKE CITY, UT 84111

EXAMINER	
MOORE, IAN N	
ART UNIT	**PAPER NUMBER**
2661	

DATE MAILED: 09/25/2003 10

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/619,361	USUDA ET AL.
	Examiner	**Art Unit**
	Ian N Moore	2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,6,9 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: both "power estimator 407" and "power calculator 407" are labeled with an identical number "407".

Appropriate correction is required.

2. Applicant is reminded of the proper language and format for an abstract of the disclosure. The abstract contains the legal phraseology "means" in line 7 and 14 at page 42.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1, 2, 3, 4, 6, 7, 9, 10, 11, 12,13, 14, 15, 17, 18, 20, and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, 2, 3, 12, 13, and 14 recite the limitation "vector" (Claim 1 – page 32, line 10; Claim 2- page 32, line 17; Claim 3 - page 33, line 12; Claim 12- page 36, line 29; Claim 13- page 37, line 11; Claim 14 - page 37, line 26). The specification or the drawing fails to discuss or show the use of vector with regards to the invention. It is unclear how to determine power with regards to vector.

Claim 1, 2, 4, 12,13, and 15 recite the limitation "amplitude" (Claim 1 – page 32, line 10; Claim 2- page 32, line 17;Claim 4 – page 33, line 20; Claim 12- page 36, line 29; Claim 13- page 37, line 11; Claim 15 – page 38, line 6). The specification or the drawing fails to discuss or show the use of amplitudes with regards to the invention. It is unclear how to determine power with regards to amplitude.

Claim 6, 10, 17, and 21 recite the following limitations:

i. "....means estimates a propagation path variation using **a channel not performing transmit power control**." (Claim 6 – page 34, line 9; Claim 10- page 35, line 23; Claim 17 – page 38, line 24; Claim 21- page 40, line 13);

ii. "...there is **not a channel other than channel**..." (Claim 10- page 35, line 21; Claim 21- page 40, line 11).

iii. """...**or even when transmitting but not performing**..." (Claim 10- page 35, line 21; Claim 21- page 40, line 11).

It is unclear what channel is used for estimating since the claims recite, " using a channel not performing transmit power control", "not a channel other than channel", and "or even when

transmitting but not performing". The specification or the drawing fails to discuss or show these claim limitations.

Claim 7 and 18 recite the limitation "...using a power control indicator **from own station**" (Claim 7 – page 34, line 15; Claim 18- page 39, line 4). It is unclear what "from own station" whether is it is a base station, mobile unit, or both. The invention specification or the drawing fails to discuss or show the claim limitation.

Claim 9, 10, 11, 20, 21, and 22 recite the limitations "small", "high", "large", "possible" and "impossible" (Claim 9 – page 34; Claim 10- page 35; Claim 11 - page 36; Claim 20 and 21- page 39; Claim 22- page 40). It is unclear what these relate terms means, and how small, large, possible, or impossible should that be with regards to the invention. The invention specification or the drawing fails to discuss or show the detail description with regards to these related terms.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Amezawa (U.S. Patent 6,438,362).

Regarding Claim 1, Amezawa '362 discloses a CDMA reception apparatus comprising (FIG. 1 illustrates a configuration of a measurement apparatus 10 of the preferred embodiment according to the present invention, which is installed in a CDMA portable-telephone device, see col. 3, line 7-10):

propagation path variation estimation (Propagation path estimator 14, Fig. 1) means for estimating a propagation path variation in a present transmit power control section from respective transmit power control sections in the past to obtain a propagation path variation estimation value (the estimator 14, which is a part of the demodulator, estimates propagation-path characteristics and supplies the estimated value of the propagation-path; see col. 3, line 24-26. The estimator 14 obtains the estimated value using a moving-averages method, wherein an averaging is executed over a predetermined number of the latest data in the pilot signal PD1 input thereto one after another; see col. 3, line 33-35);

propagation path variation correction (Subtracter 15, Fig. 1) means for correcting at least one of vector, amplitude and/or power of a received signal of said plurality of transmit power control sections with said propagation path variation estimation value obtained by said propagation path variation estimation means (the subtracter 15, provided with the estimated value, obtains a difference value by subtracting the estimated value from the demodulated pilot signal PD1. Then, the subtracter 15 supplies the difference value to the interference-signal power calculator 17; see col. 3, line 57-61);

and averaging (Interference signal power calculator 24, Fig. 1) means for averaging at least one of vector, amplitude and/or power of received signal of said plurality of transmit power control sections corrected by said propagation path variation correction means (the interference-signal power calculator 17 averages the difference by using a weighted averaging technique with a forgetting factor so as to improve the accuracy of the interference-signal power; see col. 3, line 61-65).

5. Claim 12 is rejected under 35 U.S.C. 102(e) as being anticipated by Amezawa (U.S. Patent 6,438,362).

Regarding Claim 12, Amezawa '362 discloses a received signal power measurement method of a CDMA reception apparatus, comprising (FIG. 1 illustrates a configuration of a measurement apparatus 10 of the preferred embodiment according to the present invention, which is installed in a CDMA portable-telephone device, see col. 3, line 7-10):

propagation path variation estimation step (Propagation path estimator 14, Fig. 1) for estimating a propagation path variation in a present transmit power control section from respective transmit power control sections in the past to obtain a propagation path variation estimation value (the estimator 14, which is a part of the demodulator, estimates propagation-path characteristics and supplies the estimated value of the propagation-path; see col. 3, line 24-26. The estimator 14 obtains the estimated value using a moving-averages method, wherein an averaging is executed over a predetermined number of the latest data in the pilot signal PD1 input thereto one after another; see col. 3, line 33-35);

propagation path variation correction step (Subtracter 15, Fig. 1) for correcting at least one of vector, amplitude and/or power of a received signal of said plurality of transmit power control sections with said propagation path variation estimation value obtained by said propagation path variation estimation step (the subtracter 15, provided with the estimated value, obtains a difference value by subtracting the estimated value from the demodulated pilot signal PD1. Then, the subtracter 15 supplies the difference value to the interference-signal power calculator 17; see col. 3, line 57-61);

and averaging (Interference signal power calculator 24, Fig. 1) step for averaging at least one of vector, amplitude and/or power of received signal of said plurality of transmit power control sections corrected by said propagation path variation correction step (the interference-signal power calculator 17 averages the difference by using a weighted averaging technique with a forgetting factor so as to improve the accuracy of the interference-signal power; see col. 3, line 61-65).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vasic (U.S. Patent 6,178,194) in view of Sawahashi (U.S. Patent 5,590,409).

Regarding Claim 2, Vasic '194 discloses a CDMA reception apparatus comprising: transmit power changing amount estimation (Channel Estimator 40, Fig. 2) means for estimating a changing amount of transmit power of a communication partner station varied by transmit power control in the present transmit power control section from respective transmit power control sections in the past (a channel estimation unit 40 extracts phases and amplitudes from received signals supplied from the RAKE receivers 10 and 20. In a first stage, the channel estimation unit 40 interpolates channel measurement values given by the pilot symbols to obtain a reference carrier for pre-detection. From the pre-detection, hard data is determined by a second stage carrier estimation and signal power and interference power measurements. The obtained reference carrier is used in the detection performed in the second stage; the channel estimation unit 40 further measures Eb/Io for a specific Mobile station. In response to the measured Eb/Io level, the channel estimation unit 40 further generates a power adjustment command, which is supplied to a transmitter modulator 70. As mentioned previously, bits of the power adjustment command are used in a related mobile station to regulate a transmission power; see col. 6, line 31-53);

transmit power changing amount correction (Diversity Combiner 30) means for correcting at least one of vector, amplitude and/or power of a received signal of said plurality of transmit power control sections with said transmit power changing amount estimation value obtained by said transmit power changing amount estimation means (a diversity combiner 30 coherently combines the path signals in a direction in which the signal /interference ratio becomes maximum; see col. 6, line 41-44. The diversity combiner 106

combines the communication path signals coherently. The diversity combiner 106 corrects the fading accumulation distortion and weighs the communication path signals suitably to maximize the signal power to interference power ratio; see col. 10, line 54-58);

Vasic '194 does not explicitly disclose averaging means for averaging at least one of vector, amplitude and/or power of received signal of said plurality of transmit power control sections corrected by said transmit power changing amount correction means (see Sawahashi '409 col. 6, line 17-25, the mobile station 100 sequentially measures average received power per transmission power control period, of the desired signal transmitted from the base station 200. Thus, the mobile station 100 calculates the average received power of the desired signal in the present transmission power control period and that in one or more previous transmission power control period, and then calculates the difference .DELTA.RSSI of the two).

This limitation is taught by Sawahashi '409. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Vasic '194 as taught by Sawahashi '409 for the purpose of preventing the interference to other mobile stations by achieving, by using open loop control, a quick reduction in the transmission power of the mobile station in accordance with the state of neighboring buildings in the reverse transmission power control, see Sawahashi '409 col. 4, line 4-9. The motivation being that by averaging, it can reduce extreme power variations.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 in view of Ling (U.S. Patent 5,297,161).

Regarding Claim 3, Amezawa '362 discloses the CDMA reception apparatus as described in Claim 1 above, wherein said averaging means and means to a power (to the SIR processor 18 are supplied from the desired-signal power calculator 16 and the interference-signal power calculator 17 the desired-signal power S1 and the interference-signal power I1, respectively. The desired-signal power S1 corresponds to the power of the signal s1 in Eqs. (1)-(6). Similarly, the interference-signal power I1 corresponds to the power of the signal i1 in Eqs. (1)-(6); see col. 3, line 18-26. The SIR processor 18 receives the signals S1, I1, S2 and I2 from the signal-processing channels 11, 12 to execute combining and calculation. The desired-signal power S and the interference-signal power I are obtained by simple calculation and given by S=S1+S2, I=(I1+I2)/2; see col. 4, line 52-57).

Amezawa '362 does not explicitly disclose vector and converting vector divided by said division means into a power (see Ling '161 Abstract, a method and apparatus is provided for estimating signal power. The estimating is accomplished by correlating (206) an input data vector (204) with a set of mutually orthogonal codes to generate a set of output values. The input data vector (204) consists of data samples of a received orthogonal coded signal (202)).

This limitation is taught by Ling '161. Moreover, there limitations are inherent and well known in the art. In order to perform "averaging" over plurality of elements the following steps must be done utilizing well known mathematical technique: "addition means for performing vector addition" (i.e. First, add vector value of each element), "division

means for dividing a vector added by said vector addition means with a number of vectors added" (Second, divide the sum of vectors by the total number of vectors).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by Ling '161 and utilizing well known mathematical technique for the purpose of averaging power which is accomplished by correlating an input data vector with a set of mutually orthogonal codes to generate a set of output values, see Ling '161 col. 4, line 65-68. The motivation being that vectors cannot be averaged without converting into power in order to estimates the power control, which reduces the interfaces among mobile stations.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 in view of well known arts inherency.

Regarding Claim 4, Amezawa '362 discloses the CDMA reception apparatus as described in Claim 1 above, wherein said averaging means is provided with amplitude and means for converting amplitude into a power (where s1, s2 and i1, i2 respectively represent the values of the desired-signal amplitude and the interference-signal amplitude contained in the received signals r1 and r2, col. 1, line 42-46. The SIR processor 18 are supplied from the desired-signal power calculator 16 and the interference-signal power calculator 17 the desired-signal power S1 and the interference-signal power I1, respectively. The desired-signal power S1 corresponds to the power of the signal s1 in Eqs. (1)-(6). Similarly, the interference-signal power I1 corresponds to the power of the signal i1 in Eqs. (1)-(6); see col.

3, line 18-36. The SIR processor 18 receives the signals S1, I1, S2 and I2 from the signal-processing channels 11, 12 to execute combining and calculation. The desired-signal power S and the interference-signal power I are obtained by simple calculation and given by S=S1+S2, I=(I1+I2)/2; see col. 4, line 52-57).

Amezawa '362 does not explicitly disclose addition means for performing amplitude addition; division means for dividing amplitude added by said amplitude addition means with a number of amplitudes added; and means for converting amplitude divided.

These limitations are inherent and well known in the art. In order to perform "averaging" over plurality of elements the following steps must be done utilizing well known mathematical technique: "addition means for performing amplitude addition" (i.e. First, add amplitude of each element), "division means for dividing added by said amplitude addition means with a number of amplitudes added" (Second, divide the sum of amplitude by the total number of amplitudes).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by established teaching of well known mathematical techniques of estimating for the purpose of estimating power utilizing amplitudes. The motivation being that amplitudes cannot be averaged without converting into power in order to estimates the power control, which reduces the interfaces among mobile stations.

Regarding Claim 5, Amezawa '362 discloses the CDMA reception apparatus as described in Claim 1 above, wherein said averaging means is provided and power (the SIR

processor 18 are supplied from the desired-signal power calculator 16 and the interference-signal power calculator 17 the desired-signal power S1 and the interference-signal power I1, respectively. The desired-signal power S1 corresponds to the power of the signal s1 in Eqs. (1)-(6). Similarly, the interference-signal power I1 corresponds to the power of the signal i1 in Eqs. (1)-(6); see col. 3, line 18-26. The SIR processor 18 receives the signals S1, I1, S2 and I2 from the signal-processing channels 11, 12 to execute combining and calculation. The desired-signal power S and the interference-signal power I are obtained by simple calculation and given by S=S1+S2, I=(I1+I2)/2; see col. 4, line 52-57).

Amezawa '362 does not explicitly disclose addition means for performing power addition; division means for dividing a power added by said power addition means with a number of powers added.

These limitations are inherent and well known in the art. In order to perform averaging over plurality of elements the following steps must be done utilizing well known mathematical technique: "addition means for performing power addition" (i.e. First, add power of each element), "division means for dividing added by said power addition means with a number of powers added" (Second, divide the sum of power by the total number of powers).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by established teaching of well known inherent mathematical techniques for the same reasons as discussed above in Claim 4.

9. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Vasic'194 and Sawahashi '409, as applied to claim 2 above, and further in view of Dohi (U.S. Paten 5,604,766).

Regarding Claim 7, both Vasic'194 and Sawahashi '409 disclose the CDMA reception apparatus, wherein said transmit power changing amount estimation as described in Claim 2 above.

Neither Amezawa '362 nor Sawahashi '409 disclose a transmit power changing amount using a transmit power control indicator transmitted from own station (see Dohi '766 col. 5, line 49-55; If the measured result is greater than the reference SIR, the mobile station transmits a transmission power control bit which commands the base station to reduce its transmission power. On the contrary, if the measured result is less than the reference SIR, the mobile station transmits a transmission power control bit, which commands the base station to increase its transmission power (step S24). The transmission power control bit is inserted into an information signal in a reverse frame, and is transmitted to the base station).

This limitation is taught by Dohi '766. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Vasic '194 and Sawahashi '409, as taught by Dohi '766 for the purpose of determining a transmission power control bit for controlling the transmission power of the base station on the basis of the measured result, see Dohi '766 col. 2, line 25-28. The motivation being that by sending power control indicator, it can alert the remote station to adjust the power accordingly.

10. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 (U.S. Patent 6,178,194) in view of Sawahashi '409 (U.S. Patent 5,590,409).

Regarding Claim 8, Amezawa '362 disclose the CDMA reception apparatus as descried in Claim 1 above.

However, Amezawa '362 does not explicitly disclose said averaging means further comprises averaging section setting means for setting an averaging section (see Sawahashi '409 col. 6, line 17-24, the mobile station 100 sequentially measures average received power per transmission power control period, of the desired signal transmitted from the base station 200. Thus, the mobile station 100 calculates the average received power of the desired signal in the present transmission power control period and that in one or more previous transmission power control period, and then calculates the difference .DELTA.RSSI of the two. See Sawahashi '409 col. 4, line 24-29, setting, at the mobile station, transmission power of the mobile station in accordance with the power difference when the power difference exceeds the predetermined reference power difference, and in accordance with the transmission power control bit when the power difference is lower than the predetermined reference power difference).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by Sawahashi '409 for the purpose of preventing the interference to other mobile stations by achieving, by using open loop control, a quick reduction in the transmission power of the mobile station in

accordance with the state of neighboring buildings in the reverse transmission power control, see Sawahashi '409 col. 4, line 5-9. The motivation being that by averaging, it can reduce extreme power variations.

11. Claim 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 and Sawahashi '409, as applied to claim 8 above, and further in view of Kitade (U.S. Paten 6,385,184).

Regarding Claim 9, Amezawa '362 disclose the CDMA reception apparatus as described in Claim 1 above.

However, Amezawa '362 does not explicitly disclose wherein said averaging section setting means comprises: means for setting said averaging section, when performing communication by a channel of which a power allocated to a signal subjected to received signal power measurement existing in each transmit power control section is high (Sawahashi '409 col. 6, line 55-61, at step S6, the mobile station tests to decide whether the transmission power P.sub.T calculated at steps S4 and S5 exceeds a predetermined maximum allowable transmission power P.sub.max. If P.sub.T does not exceed P.sub.max, the mobile station carries out the transmission at the transmission power P.sub.T at step S7, whereas if P.sub.T exceeds P.sub.max, it performs the transmission at the maximum allowable transmission power P.sub.max at step S8. Also, see Sawahashi '409 col. 7, line 34-41, since the closed loop control is switched to the open loop control that determines the transmission power P.sub.T in accordance with the change. DELTA.RSSI in the desired received signal power of

the mobile station when the received signal power of the mobile station suddenly increases owing to a propagation state surrounding the mobile station, the transmission power of the mobile station can be reduced in a very short time).

and means for setting said averaging section, when performing communication by a channel of which a power allocated to a signal subjected to received signal power measurement existing in each transmit power control section is small (Sawahashi '409 col. 6 line 31-36, if the average power difference .DELTA.RSSI exceeds the reference power difference .DELTA.P.sub.th, the mobile station quickly decreases its transmission power on the assumption that the mobile station moves out of the shadow of a building to a line of sight area).

This limitation is taught by Sawahashi '409. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by Sawahashi '409 for the same reason as described in Claim 8 above.

Neither Amezawa '362 nor Sawahashi '409 discloses section being small or large (see Kitade '184, col. 5, line 43-52, the mobile station measures reception SIR according to pilot data 204 at the start of a slot. It compares this SIR measurement result with a reference SIR and if the reception SIR is lower, generates a transmission power control bit as a command to instruct the base station to increase transmission power, and if the reception SIR is higher, generates a transmission power control bit as a command to instruct the base station to lower transmission power. This transmission power control bit is embedded as transmission power control data 205 on the uplink and transmitted).

This limitation is taught by Kitade '184. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Amezawa '362 and Sawahashi '409, as taught by Kitade '184 for purpose of minimizing the transmit of power interference. The motivation being that by implementation such mechanism, it will minimize the transmit power interferences.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 and Sawahashi '409, as applied to claim 8 above, and further in view of Kubo (U.S. Patent 6,249,682).

Regarding Claim 11, both Amezawa '362 and Sawahashi '409 disclose the CDMA reception apparatus, averaging, and setting averaging section in Claim 8 above.

However, neither Amezawa '362 nor Sawahashi '409 does not explicitly disclose wherein said averaging section setting means comprises: traveling speed detection means for detecting a relative traveling speed between a communication partner station and own station (see Kubo '682 col. 4, line 23-33, in this control, on the receiving side, a transmission power control command is created, and the command is transmitted to the transmitting side. On the transmitting side the transmission power is modified based on the received transmission power control command. Since the value of the transmission power control command changes according to cm instantaneous fluctuation such as fading following the traveling of the mobile station, the moving speed can be estimated, if a change is detected);

and means for setting said averaging section to a small section when said detected traveling speed is large, and for setting said averaging section to a large section when to said detected traveling speed is small (see Kubo '682, col. 6, line 60-63, when the moving speed is high, the code is often reversed. Accordingly, when the moving speed becomes low, the frequency of the cases where data with the same code continues tends to increase. When the moving speed becomes high, this frequency tends to decrease.)

This limitation is taught by Kubo '682. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Amezawa '362 and Sawahashi '409, as taught by Kubo '682 for purpose of controlling signal power since the base station and the mobile station have both the functions of the transmitting station and receiving station, the base and mobile stations can estimate the moving speed of an opposing station using both transmission power control command and desired signal power, see Kubo '682 col. 3, line 5-9. The motivation being that by adjusting the power, it will minimize the interferences with other stations.

13. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vasic (U.S. Patent 6,178,194) in view of Sawahashi (U.S. Patent 5,590,409).

Regarding Claim 13, Vasic '194 discloses a received power measurement method of a CDMA reception apparatus comprising:

transmit power changing amount estimation step (Channel Estimator 40, Fig. 2) for estimating a changing amount of transmit power of a communication partner station varied by transmit power control in the present transmit power control section from respective transmit power control sections in the past (a channel estimation unit 40 extracts phases and amplitudes from received signals supplied from the RAKE receivers 10 and 20. In a first stage, the channel estimation unit 40 interpolates channel measurement values given by the pilot symbols to obtain a reference carrier for pre-detection. From the pre-detection, hard data is determined by a second stage carrier estimation and signal power and interference power measurements. The obtained reference carrier is used in the detection performed in the second stage; the channel estimation unit 40 further measures Eb/Io for a specific Mobile station. In response to the measured Eb/Io level, the channel estimation unit 40 further generates a power adjustment command, which is supplied to a transmitter modulator 70. As mentioned previously, bits of the power adjustment command are used in a related mobile station to regulate a transmission power; see col. 6, line 31-53);

transmit power changing amount correction (Diversity Combiner 30) step for correcting at least one of vector, amplitude and/or power of a received signal of said plurality of transmit power control sections with said transmit power changing amount estimation value obtained by said transmit power changing amount estimation step (a diversity combiner 30 coherently combines the path signals in a direction in which the signal /interference ratio becomes maximum; see col. 6, line 41-44. The diversity combiner 106 combines the communication path signals coherently. The diversity combiner 106 corrects the fading

accumulation distortion and weighs the communication path signals suitably to maximize the signal power to interference power ratio; see col. 10, line 54-58);

Vasic '194 does not explicitly disclose averaging step for averaging at least one of vector, amplitude and/or power of received signal of said plurality of transmit power control sections corrected by said transmit power changing amount correction step (see Sawahashi '409 col. 6, line 17-25, the mobile station 100 sequentially measures average received power per transmission power control period, of the desired signal transmitted from the base station 200. Thus, the mobile station 100 calculates the average received power of the desired signal in the present transmission power control period and that in one or more previous transmission power control period, and then calculates the difference .DELTA.RSSI of the two).

This limitation is taught by Sawahashi '409. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Vasic '194 as taught by Sawahashi '409 for the purpose of preventing the interference to other mobile stations by achieving, by using open loop control, a quick reduction in the transmission power of the mobile station in accordance with the state of neighboring buildings in the reverse transmission power control, see Sawahashi '409 col. 4, line 4-9. The motivation being that by averaging, it can reduce extreme power variations.

14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 in view of Ling (U.S. Patent 5,297,161).

Regarding Claim 14, Amezawa '362 discloses a received signal power measurement method as described in Claim 12 above, wherein said averaging step (to the SIR processor 18 are supplied from the desired-signal power calculator 16 and the interference-signal power calculator 17 the desired-signal power S1 and the interference-signal power I1, respectively. The desired-signal power S1 corresponds to the power of the signal s1 in Eqs. (1)-(6). Similarly, the interference-signal power I1 corresponds to the power of the signal i1 in Eqs. (1)-(6); see col. 3, line 18-26. The SIR processor 18 receives the signals S1, I1, S2 and I2 from the signal-processing channels 11, 12 to execute combining and calculation. The desired-signal power S and the interference-signal power I are obtained by simple calculation and given by S=S1+S2, I=(I1+I2)/2; see col. 4, line 52-57).

Amezawa '362 does not explicitly disclose vector and converting vector divided by said division step into a power (see Ling '161 Abstract, a method and apparatus is provided for estimating signal power. The estimating is accomplished by correlating (206) an input data vector (204) with a set of mutually orthogonal codes to generate a set of output values. The input data vector (204) consists of data samples of a received orthogonal coded signal (202)).

This limitation is taught by Ling '161. Moreover, there limitations are inherent and well known in the art. In order to perform "averaging" over plurality of elements the following steps must be done utilizing well known mathematical technique: "addition step for performing vector addition" (i.e. First, add vector value of each element), "division step for dividing a vector added by said vector addition step with a number of vectors added" (Second, divide the sum of vectors by the total number of vectors).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by Ling '161 and utilizing well known mathematical technique for the purpose of averaging power which is accomplished by correlating an input data vector with a set of mutually orthogonal codes to generate a set of output values, see Ling '161 col. 4, line 65-68. The motivation being that vectors cannot be averaged without converting into power in order to estimates the power control, which reduces the interfaces among mobile stations.

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 in view of well known arts inherency.

Regarding Claim 15, Amezawa '362 discloses the received signal power measurement method as described in Claim 12 above, wherein said averaging step is provided with amplitude and step for converting amplitude into a power (where s1, s2 and i1, i2 respectively represent the values of the desired-signal amplitude and the interference-signal amplitude contained in the received signals r1 and r2, col. 1, line 42-46. The SIR processor 18 are supplied from the desired-signal power calculator 16 and the interference-signal power calculator 17 the desired-signal power S1 and the interference-signal power I1, respectively. The desired-signal power S1 corresponds to the power of the signal s1 in Eqs. (1)-(6); see col. 3, line 18-26. Similarly, the interference-signal power I1 corresponds to the power of the signal i1 in Eqs. (1)-(6). The SIR processor 18 receives the signals S1, I1, S2 and I2 from the signal-processing channels 11, 12 to execute combining and calculation. The

desired-signal power S and the interference-signal power I are obtained by simple calculation and given by S=S1+S2, I=(I1+I2)/2; see col. 4, line 52-57).

Amezawa '362 does not explicitly disclose addition step for performing amplitude addition; division step for dividing amplitude added by said amplitude addition step with a number of amplitudes added; and step for converting amplitude divided.

These limitations are inherent and well known in the art. In order to perform "averaging" over plurality of elements the following steps must be done utilizing well known mathematical technique: "addition step for performing amplitude addition" (i.e. First, add amplitude of each element), "division step for dividing added by said amplitude addition step with a number of amplitudes added" (Second, divide the sum of amplitude by the total number of amplitudes).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by established teaching of well known mathematical techniques of estimating for the purpose of estimating power utilizing amplitudes. The motivation being that amplitudes cannot be averaged without converting into power in order to estimates the power control, which reduces the interfaces among mobile stations.

Regarding Claim 16, Amezawa '362 discloses the received signal power measurement method as described in Claim 12 above, wherein said averaging step is provided and power (the SIR processor 18 are supplied from the desired-signal power calculator 16 and the interference-signal power calculator 17 the desired-signal power S1 and

the interference-signal power I1, respectively. The desired-signal power S1 corresponds to the power of the signal s1 in Eqs. (1)-(6). Similarly, the interference-signal power I1 corresponds to the power of the signal i1 in Eqs. (1)-(6); see col. 3, line 18-26. The SIR processor 18 receives the signals S1, I1, S2 and I2 from the signal-processing channels 11, 12 to execute combining and calculation. The desired-signal power S and the interference-signal power I are obtained by simple calculation and given by S=S1+S2, I=(I1+I2)/2; see col. 4, line 52-57).

Amezawa '362 does not explicitly disclose addition step for performing power addition; division step for dividing a power added by said power addition step with a number of powers added.

These limitations are inherent and well known in the art. In order to perform averaging over plurality of elements the following steps must be done utilizing well known mathematical technique: "addition step for performing power addition" (i.e. First, add power of each element), "division step for dividing added by said power addition step with a number of powers added" (Second, divide the sum of power by the total number of powers).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by established teaching of well known inherent mathematical techniques for the same reasons as discussed above in Claim 15.

16. Claim 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Vasic'194 and Sawahashi '409, as applied to claim 13 above, and further in view of Dohi (U.S. Paten 5,604,766).

Regarding Claim 18, both Vasic'194 and Sawahashi '409 disclose the received signal power measurement method, wherein said transmit power changing amount estimation step as described in Claim 13 above.

Neither Amezawa '362 nor Sawahashi '409 disclose a transmit power changing amount using a transmit power control indicator transmitted from own station (see Dohi '766 col. 5, line 49-55; If the measured result is greater than the reference SIR, the mobile station transmits a transmission power control bit which commands the base station to reduce its transmission power. On the contrary, if the measured result is less than the reference SIR, the mobile station transmits a transmission power control bit, which commands the base station to increase its transmission power (step S24). The transmission power control bit is inserted into an information signal in a reverse frame, and is transmitted to the base station).

This limitation is taught by Dohi '766. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Vasic '194 and Sawahashi '409, as taught by Dohi '766 for the purpose of determining a transmission power control bit for controlling the transmission power of the base station on the basis of the measured result, see Dohi '766 col. 2, line 25-28. The motivation being that by sending power control indicator, it can alert the remote station to adjust the power accordingly.

17. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 (U.S. Patent 6,178,194) in view of Sawahashi '409 (U.S. Patent 5,590,409).

Regarding Claim 19, Amezawa '362 the received signal power measurement method as descried in Claim 12 above.

However, Amezawa '362 does not explicitly disclose said averaging step further comprises averaging section setting step for setting an averaging section (see Sawahashi '409 col. 6, line 17-24, the mobile station 100 sequentially measures average received power per transmission power control period, of the desired signal transmitted from the base station 200. Thus, the mobile station 100 calculates the average received power of the desired signal in the present transmission power control period and that in one or more previous transmission power control period, and then calculates the difference .DELTA.RSSI of the two. See Sawahashi '409 col. 4, line 24-29, setting, at the mobile station, transmission power of the mobile station in accordance with the power difference when the power difference exceeds the predetermined reference power difference, and in accordance with the transmission power control bit when the power difference is lower than the predetermined reference power difference).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by Sawahashi '409 for the purpose of preventing the interference to other mobile stations by achieving, by using open loop control, a quick reduction in the transmission power of the mobile station in accordance with the state of neighboring buildings in the reverse transmission power control,

see Sawahashi '409 col. 4, line 5-9. The motivation being that by averaging, it can reduce extreme power variations.

18. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 and Sawahashi '409, as applied to claim 19 above, and further in view of Kitade (U.S. Paten 6,385,184).

Regarding Claim 20, Amezawa '362 disclose the received power measurement method as described in Claim 12 above.

However, Amezawa '362 does not explicitly disclose wherein said averaging section setting step comprises: a step for setting said averaging section, when performing communication by a channel of which a power allocated to a signal subjected to received signal power measurement existing in each transmit power control section is high (see Sawahashi '409 col. 6, line 55-64; at step S6, the mobile station tests to decide whether the transmission power P.sub.T calculated at steps S4 and S5 exceeds a predetermined maximum allowable transmission power P.sub.max. If P.sub.T does not exceed P.sub.max, the mobile station carries out the transmission at the transmission power P.sub.T at step S7, whereas if P.sub.T exceeds P.sub.max, it performs the transmission at the maximum allowable transmission power P.sub.max at step S8. Also, see Sawahashi '409 col. 7, line 34-41, since the closed loop control is switched to the open loop control that determines the transmission power P.sub.T in accordance with the change. DELTA.RSSI in the desired received signal power of the mobile station when the received signal power of the mobile station suddenly

increases owing to a propagation state surrounding the mobile station, the transmission power of the mobile station can be reduced in a very short time).

and a step for setting said averaging section, when performing communication by a channel of which a power allocated to a signal subjected to received signal power measurement existing in each transmit power control section is small (Sawahashi '409 col. 6 Line 31-36, if the average power difference .DELTA.RSSI exceeds the reference power difference .DELTA.P.sub.th, the mobile station quickly decreases its transmission power on the assumption that the mobile station moves out of the shadow of a building to a line of sight area).

This limitation is taught by Sawahashi '409. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Amezawa '362 as taught by Sawahashi '409 for the same reason as described in Claim 19 above.

Neither Amezawa '362 nor Sawahashi '409 discloses section being small or large (see Kitade '184, col. 5, line 43-52, the mobile station measures reception SIR according to pilot data 204 at the start of a slot. It compares this SIR measurement result with a reference SIR and if the reception SIR is lower, generates a transmission power control bit as a command to instruct the base station to increase transmission power, and if the reception SIR is higher, generates a transmission power control bit as a command to instruct the base station to lower transmission power. This transmission power control bit is embedded as transmission power control data 205 on the uplink and transmitted).

This limitation is taught by Kitade '184. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Amezawa '362 and Sawahashi '409, as taught by Kitade '184 for purpose of minimizing the transmit of power interference. The motivation being that by implementation such mechanism, it will minimize the transmit power interferences.

19. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Amezawa '362 and Sawahashi '409, as applied to claim 19 above, and further in view of Kubo (U.S. Patent 6,249,682).

Regarding Claim 22, both Amezawa '362 and Sawahashi '409 disclose the received signal power measurement, averaging, and setting averaging section in Claim 19 above.

However, neither Amezawa '362 nor Sawahashi '409 does not explicitly disclose wherein said averaging section setting step comprises: a step detecting a relative traveling speed between a communication partner station and own station (see Kubo '682 col. 4, line 23-33, In this control, on the receiving side, a transmission power control command is created, and the command is transmitted to the transmitting side. On the transmitting side the transmission power is modified based on the received transmission power control command. Since the value of the transmission power control command changes according to cm instantaneous fluctuation such as fading following the traveling of the mobile station, the moving speed can be estimated, if a change is detected);

and a step for setting said averaging section to a small section when said detected traveling speed is large, and for setting said averaging section to a large section when to said detected traveling speed is small (see Kubo '682, col. 6, line 60-63, when the moving speed is high, the code is often reversed. Accordingly, when the moving speed becomes low, the frequency of the cases where data with the same code continues tends to increase. When the moving speed becomes high, this frequency tends to decrease.)

This limitation is taught by Kubo '682. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Amezawa '362 and Sawahashi '409, as taught by Kubo '682 for purpose of controlling signal power since the base station and the mobile station have both the functions of the transmitting station and receiving station, the base and mobile stations can estimate the moving speed of an opposing station using both transmission power control command and desired signal power, see Kubo '682 col. 3, line 5-9. The motivation being that by adjusting the power, it will minimize the interferences with other stations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N Moore whose telephone number is 703-605-1531. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doug Olms can be reached on 703-305-4703. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Ian N Moore
Examiner
Art Unit 2661

INM
9/8/03

KENNETH VANDERPUYE
PRIMARY EXAMINER